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Claims

[c1] 1. A system for generating hydrogen from an exhaust stream from an internal combustion engine, the system comprising:

a venturi in fluid communication with an exhaust stream;

a condenser in fluid communication with said venturi, said condenser extracting water from said exhaust stream; and,

an electrolyzer in fluid communication with said condenser, said electrolyzer producing hydrogen gas.

[c2] 2. The system of claim 1 further comprising a fluid reservoir for storing said water, said reservoir in fluid communication with said condenser and said electrolyzer.

[c3] 3. The system of claim 1 wherein said electrolyzer utilizes a proton exchange membrane to separate the hydrogen from the oxygen.

[c4] 4. The system of claim 1 wherein said condenser is a thermo-electric cooler.

[c5] 5. A system for generating hydrogen for use with an internal combustion engine, the system comprising:

an exhaust venturi;

a condenser in fluid communication with said venturi and said air inlet, said condenser extracting water from said ambient air;

an air inlet between said venturi and condenser; and,

an electrolyzer in fluid communication with said condenser, said electrolyzer producing hydrogen gas.

[c6] 6. The hydrogen generating system of claim 5 further comprising a reservoir, said reservoir being in fluid communication with said condenser and said venturi.

[c7] 7. The hydrogen generating system of claim 6 further comprising a polisher, said polisher in fluid communication with said reservoir and said electrolyzer.

[c8] 8. A system for generating hydrogen for use with an internal combustion engine, the system comprising:

a means for removing a portion of an exhaust gas;

a means for condensating water from said exhaust gas;

a means for storing said condensated water, said storage means coupled to said condensating means;

a means for electrolyzing said stored condensated water; and

a means for storing said hydrogen gas;

9. The hydrogen generating system of claim 8 wherein said means for condensating is a thermo-electric cooler.

[c9] 10. The hydrogen generating system of claim 9 wherein said gas is exhaust from an internal combustion engine.

[c10] 11. The hydrogen generating system of claim 10 wherein said gas is air.

[c11] 12. The hydrogen generating system of claim 8 wherein said electrolyzing means is a proton exchange membrane electrolyzer.

[c12] 13. The hydrogen generating system of claim 8 further comprising a gas inlet means, said gas inlet means including an ambient air inlet and a exhaust gas inlet.

[c13] 14. The hydrogen generating system of claim 13 further comprising a means for determining required condenser energy, said determining means coupled to said inlet means.

[c14] 15. The hydrogen generating system of claim 8 further comprising a means for providing a reserve reservoir.

[c15] 16. A system for generating hydrogen, said system comprising:

an internal combustion engine;

an exhaust pipe coupled to said internal combustion engine;

a tube in fluid communication with said exhaust pipe;

an air inlet in fluid communication with said tube;

a condenser in fluid communication with said tube; and,

an electrolyzer in fluid communication with said condenser.

[c16] 17. The hydrogen generating system of claim 16 wherein said electrolyzer is in fluid communication with said internal combustion engine.

[c17] 18. The hydrogen generating system of claim 17 further comprising a reservoir, said reservoir in fluid communication with said condenser and said electrolyzer.

[c18] 19. The hydrogen generating system of claim 18 wherein said reservoir is in fluid communication with said exhaust pipe.

[c19] 20. The hydrogen generating system of claim 18 further comprising a polisher in fluid communication with said reservoir and said electrolyzer.

[c20] 21. A method for generating hydrogen for use with an internal combustion engine comprising the steps of:

generating pressure using an exhaust pipe from an internal combustion engine;
condensating reactant water from a gas; and,
generating hydrogen from said reactant water.

[c21] 22.The method of generating hydrogen of claim 21 wherein said gas is exhaust gas.

[c22] 23. The method of generating hydrogen of claim 21 wherein said gas is air.

[c23] 24. The method of generating hydrogen of claim 21 further comprising the step of flowing said gas through a condenser.

[c24] 25. The method of generating hydrogen of claim 22 further comprising the step of storing said reactant water.

[c25] 26. The method of generating hydrogen of claim 25 further comprising the step of polishing said reactant water to remove contaminants.

[c26] 27. The method of generating hydrogen of claim 26 further comprising the step of separating oxygen from said reactant water.

[c27] 28. The method of generating hydrogen of claim 26 further comprising the step of regulating the flow of hydrogen to the internal combustion engine.